

1 VQE results Aer Estimator (No Shots)

(Full Hamiltonian)			Harmonic Oscillator		$\Lambda = 16$		COYBLA Max 10K Iterations		
Ansatz	Tolerance	Converged runs	Mean iter	VQE min E.	Δ_{min}	VQE median E.	Δ_{median}	Exact	Time
RA r1 rl	1e-01	100/100	92	5.573e-03	5.573e-03	3.9838e-02	3.9838e-02	0e+00	00h 00m 30s
RA r1 rl	1e-02	100/100	165	5.6144e-05	5.6144e-05	4.1757e-04	4.1757e-04	-	00h 00m 50s
RA r1 rl	1e-03	100/100	283	7.3709e-07	7.3709e-07	4.6328e-06	4.6328e-06	-	00h 01m 24s
RA r1 rl	1e-04	100/100	491	8.3441e-09	8.3441e-09	6.3936e-08	6.3936e-08	-	00h 02m 34s
RA r1 rl	1e-05	99/100	832	6.5123e-11	6.5123e-11	4.9586e-10	4.9586e-10	-	00h 04m 58s
RA r1 rl	1e-06	98/100	1015	5.3207e-13	5.3207e-13	5.2183e-12	5.2183e-12	-	00h 05m 12s
RA r1 rl	1e-07	99/100	1027	7.494e-15	7.494e-15	5.5234e-14	5.5234e-14	-	00h 04m 17s
RA r1 rl	1e-08	97/100	1022	4.996e-16	4.996e-16	1.249e-14	1.249e-14	-	00h 04m 57s
Ansatz	Tolerance	Converged runs	Mean iter	VQE min E.	Δ_{min}	VQE median E.	Δ_{median}	Exact	Time

Table 1